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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/509,356

09/28/2004

Jon E. Stanat

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5045

23455 7590 10/24/2007
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EXAMINER

BULLOCK, IN SUK C

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

10/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/509,356

Applicant(s)

STANAT ET AL.

Examiner

In Suk Bullock

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,12-24,26-28,31,32,36-38 and 40-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,12-24,26-28,31,32,36-38 and 40-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

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DETAILED ACTION

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

In response to the amendment dated 10/8/2007, claims 6-11, 25, 29-30, 33-35, 39, and 44-46 are canceled.

Claims 1, 3-5, 12-24, 26-28, 31-32, 36-38, and 40-42 are currently pending in the case.

Response to Arguments

Applicant's arguments, see page 6, paragraphs 6-8, filed October 8, 2007, with respect to the rejection(s) of claim(s) 1, 5, 6, 8-11, 16, 18-21, 36-38, and 43 under 35 USC 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of different interpretation of previously applied reference to Blain et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-5, 12-24, 26-28, 31-32, 36-38, and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,026,933 to Blain et al. (hereinafter "Blain") in view of EP 0 402 051 A2 (hereinafter "EP").

Blain discloses a process for producing substantially linear hydrocarbons by oligomerizing a lower olefin at elevated temperature and pressure with a selectivated crystalline molecular sieve catalyst (Abstract). When a surface-inactivated, but internally active, ZSM-23 metallosilicate zeolite catalyst is employed in an olefin oligomerization, the reaction yields a high quality, essentially linear oligomer stock

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which can be efficiently converted to high VI lube oils (col. 4, lines 24-34). The level of acid sites selectivated is dependent upon the size of crystallites. Smaller crystallites are preferred for oligomerization reactions and, therefore, more than 15% of the total Bronsted acid sites may require to be neutralized. The crystalline molecular sieve catalyst used is ZSM-23 which is selectivated with 2,4,6-trimethyl pyridine (col. 5, lines 1-21). Blain specifically discloses oligomerizing either propylene, butene or a mixture thereof. The oligomers produced may be separated into fractions by conventional distillation separation. The average degree of branching ranges from 0.80 to 2.00 . See col. 5, line 26 to col. 7, line 2. Example XIV of the reference shows an oligomerization of 1-butene with a HZSM-23 catalyst which was treated with 2,4,6-collidine, operating temperature in the range of 180-205° C, pressure in the range of 520-540 psig (3.6-3.7 MPa), and WHSV in the range of 0.21-0.29. The example also shows the degree of branching for C₈ to C₁₆ from 0.96 to 1.34 (see Table 13). The reference further discloses that the olefin produced by the process may be used as is or may be blended with other olefins. One use for olefin oligomers is as alkylating agents in a process for the selective alkylation of an aromatic compound to produce phenylalkanes (col. 7, lines 3-17).

The difference between Blain and the claimed invention is that Blain does not specifically disclose oligomerizing a mixed olefin feed having 4 and 5 carbon atoms. However, it is noted that Blain discloses that a typical prior art reactive feedstock consists essentially of C₃-C₆ mono-olefins in the presence of a medium pore shape selective acid crystalline zeolite (col. 6, lines 51-64). Blain also discloses that

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substantially linear hydrocarbons are produced by oligomerizing lower olefin using a selectivated medium pores shape selective ZSM-23 catalyst. In view of these combined disclosure, it would have been obvious to one having ordinary skill in the art to have modified the process of Blain by employing a mixed feedstock of any combination from C₃-C₆ mono-olefins including the claimed mixed feedstock with the expectation of achieving similar results.

It is noted that Blain does not explicitly disclose a Type V double bond content of at most 10%. Since the process of Blain is similar to the claimed process, it would have been expected that the process of Blain would also produce similar results with respect to a Type V double bond content.

With regard to the claimed conversion rate per pass of at most 65%, it would have been obvious to one having ordinary skill in the art to determine the most effective conversion rate per pass depending upon desired products. It is known to those skilled in the art that process conditions determine the conversion rate per pass which in turn effect product distribution.

Blain does not teach downstream processing of the recovered oligomers to produce other products, i.e., oxonation, hydrogenation, esterification, etherification, etc.

The EP reference discloses processes for preparation of saturated alcohol derivatives and their use in detergent; plasticizer; and synthetic lubricant formulations (page 2, lines 1-12). EP discloses using a selectivated ZSM-23 catalyst for oligomerization of propylene and/or butene to produce oligomers having an average degree of branching from 0.80 to 2.00, followed by hydroformylation (oxonation) of

oligomer and esterification of the saturated alcohol. The products are used in detergents, plasticizers, and lubricants. The resultant alcohols can be esterified or etherified. See page 2, lines 33-47 and page 3, lines 4-42.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Blain and further process the recovered oligomers to produce valuable products as taught by the EP reference.

Response to Arguments

Applicant's arguments filed 10/8/2007 with regard to claims 22, 26, 27, and 40-42 have been fully considered but they are not persuasive.

Applicant argues that the combination of references "fail to suggest an aldehyde product (Claim 22), oxidizing and recovering an acid product (Claim 26) and esterifying said acid product (Claim 27), and also the limitations of claims 40-42." This is not found persuasive because EP discloses hydroformylation (production of aldehyde, see page, lines 15-18), esterification (page 3, lines 31-35), and further discloses preparation of detergent, plasticizer, and synthetic lubricant formulations (page 2, lines 1-12). Moreover, Blain discloses downstream processing of oligomer products (col. 7, lines 3-7). It is within the level of one having ordinary skill in the art to recover desired products such as aldehydes.

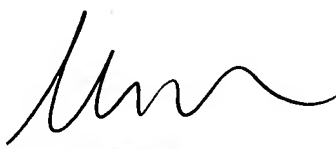
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to In Suk Bullock whose telephone number is 571-272-5954. The examiner can normally be reached on Monday - Friday 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


I.B.


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